The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A process for preparing tetrahydropterin or a tetrahydropterin compound comprising hydrogenating pterin or a pterin compound with hydrogen in a polar reaction medium in the presence of a hydrogenation catalyst that is a metal complex that is soluble in the reaction medium, wherein the catalyst has (i) a ligand comprising a triarylphosphine ~~tertiary phosphine~~, (ii) a ligand comprising a tetramethylene phenylphosphine or a pentamethylene phenylphosphine ~~tertiary phosphane~~, or (iii) a bidentate ligand with a tertiary amine group and a phosphine group or with two triarylphosphine ~~tertiary phosphine~~ groups as complexing groups, wherein the bidentate ligands form together with a metal atom a five- to ten membered ring.

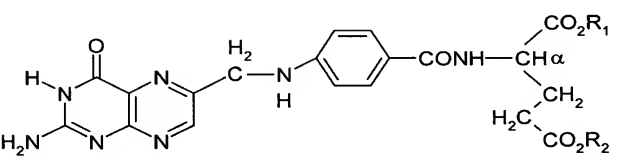
2. (Previously Presented) A process according to claim 1, wherein the polar reaction medium is an aqueous or alcoholic reaction medium.

3. (Previously Presented) A process according to claim 1, wherein the pterin compound is folic acid, a folic acid salt, a folic acid ester, a folic acid ester salt or a dihydro form thereof, with the proviso that in the event of using folic acid, a carboxylic acid thereof or a dihydro form thereof, the reaction medium is aqueous, and in the event of using a folic acid ester, a folic acid ester salt or a dihydro form thereof, the reaction medium is an alcohol.

4. (Previously Presented) A process according to claim 1, wherein the metal complex contains a chiral ligand.

5. (Previously Presented) A process according to claim 3, wherein the metal complex contains a chiral ligand.

6. (Currently Amended) A process according to claim 5, wherein the folic acid ester salt is of formula III and is in the form of a single enantiomer or a mixture of enantiomers of formula III,



x HA (III),

in which

one of R_1 or R_2 is H, and the other one of R_1 or R_2 is a monovalent hydrocarbon radical ~~in which one or more carbon atoms are independently replaced with a heteroatom selected from the group consisting of –O–, –S–, and –N–, the hydrocarbon radical in which one or more carbon atoms are independently replaced with a heteroatom being~~ attached via a carbon atom that contains one or more oxygen, sulfur or nitrogen atoms, or

both R_1 and R_2 independently of one another represent a monovalent hydrocarbon radical or a hydrocarbon radical ~~in which one or more carbon atoms are independently replaced with a~~

~~heteroatom selected from the group consisting of -O-, -S-, and -N-, the hydrocarbon radical in which one or more carbon atoms are independently replaced with a heteroatom being~~ attached via a carbon atom that contains one or more oxygen, sulfur or nitrogen atoms,

HA stands for a monobasic to tribasic inorganic or organic acid, and

x denotes an integer from 1 to 6 or a fractional number between 0 and 6.

7. (Previously Presented) A process according to claim 6, wherein HA is unsubstituted or substituted phenylsulphonic acid.

8. (Previously Presented) A process according to claim 1, wherein said process is carried out at a hydrogen pressure of 1 to 500 bars.

9. (Previously Presented) A process according to claim 1, wherein said process is carried out at a temperature is 0 to 150^0 C.

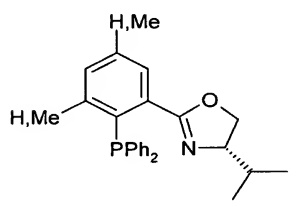
10. (Previously Presented) A process according to claim 1, wherein the molar ratio of pterin or pterin compound to catalyst is 10 to 100,000.

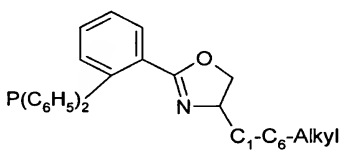
11. (Previously Presented) A process according to claim 1, wherein the reaction medium is water or water in admixture with an organic solvent.

12. (Previously Presented) A process according to claim 2, wherein the alcoholic reaction medium is an alcohol, or an alcohol in admixture with an organic solvent.

13. (Previously Presented) A process according to claim 1, wherein the metal complex contains a d-8 metal.

14. (Currently Amended) A process for preparing tetrahydropterin or a tetrahydropterin compound comprising hydrogenating pterin or a pterin compound with hydrogen in a polar reaction medium in the presence of a hydrogenation catalyst that is a metal complex that is soluble in the reaction medium, wherein the catalyst has a ligand that is an achiral or chiral ditertiary diphosphine, or a compound of the following formulae





15. (Previously Presented) A process according to claim 14, wherein the reaction medium is an alcoholic reaction medium, and wherein in the ditertiary diphosphines the phosphine groups are attached (a) to various carbon atoms of a hydrocarbon chain having 2 to 4 carbon atoms, or (b) directly via a bridging group $-CR_aR_b-$ in the ortho positions of a cyclopentadienyl ring or to a cyclopentadienyl ring of a ferrocenyl, wherein R_a and R_b are the same or different and stand for H, C_1-C_8 alkyl, C_1-C_4 fluroalkyl, C_5-C_6 cycloalkyl, phenyl, benzyl, or phenyl or benzyl substituted with 1 to 3 C_1-C_4 alkyl or C_1-C_4 alkoxy.

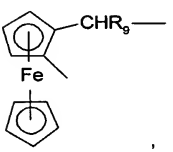
16. (Previously Presented) A process according to claim 14, wherein the reaction medium is an alcoholic reaction medium, and the diphosphine of formula IV,

$$R_4R_5P\text{-}R_6\text{-}PR_7R_8 \qquad (IV)$$

in which

R_4, R_5, R_7 and R_8 independently of one another represent a hydrocarbon radical with 1 to 20 carbon atoms, which is unsubstituted or substituted with halogen, C_1-C_6 alkyl, C_1-C_6 haloalkyl, C_1-C_6 alkoxy, C_1-C_6 haloalkoxy, $(C_6H_5)_3Si$, $(C_1$-C_{12} alkyl$)_3Si$, $-NH_2$, -NH(C_1-C_{12} alkyl), -NH(phenyl), -NH(benzyl), -N(C_1-C_{12} alkyl)$_2$, -N(phenyl)$_2$, -N(benzyl)$_2$, morpholinyl, piperidinyl, pyrrolidinyl, piperazinyl, -ammonioum-X_3^-, $-SO_3M_1$, $-CO_2M_1$, $-PO_3M_1$, or $-CO_2$-C_1-C_6 alkyl, in which M_1 represents an alkali metal or hydrogen and X_3^- is the anion of a monobasic acid; or R_4 and R_5, and/or R_7 and R_8 together denote tetramethylene, pentmethylene, or 3-oxa-pentane-1,5-diyl, which is unsubstituted or substituted with halogen, C_1-C_6 alkyl or C_1-C_6 alkoxy; and R_6 is C_2-C_4 alkylene, which is unstubsituted or substituted with C_1-C_6 alkyl, C_1-C_6 alkoxy, C_5 or C_6 cylcoalkyl, phenyl, napthyl, or benzyl; 1,2 or 1,3-cycloalkylene, 1,2- or 1,3-cycloalkyenylene, 1,2- or 1,3-bicylcoalkylene or 1,2- or 1,3-bicylcoalkenylene with 4 to 10 carbon atoms, which is unsubstituted or substituted with C_1-C_6 alkyl, phenyl, or benzyl; 1,2- or 1,3-cycloalkylene, 1,2- or 1,3-cycloalkylene, 1,2- or 1,3-bicycloalkylene or 1,2- or 1,3-bicycloalkylene with 4 to 10 carbon atoms, which is unsubstituted or substituted with C_1-C_6 alkyl, phenyl, or benzyl, at whose 1 and/or 2 positions or at whose 3-position methylene or C_2-C_4 alkylidene is attached; 1,4-butylene substituted in the 2,3 positions with $R_9R_{10}C(O\text{-})_2$, and which in the 1 and/or 4 positions is unsubstituted or substituted with C_1-C_6 alkyl, phenyl, or benzyl, and

where R_9 and R_{10} independently of one another represent hydrogen, C_1-C_6 alkyl, phenyl or benzyl; 3,4- or 2,4-pyrrolidinylene or methylene-4-pyrrolidine-4-yl whose nitrogen atom is substituted with hydrogen, C_1-C_{12} alkyl, phenyl, benzyl, C_1-C_{12} alkoxycarbonyl, C_1-C_8 acyl, C_1-C_{12} alkylaminocarbonyl; or denotes 1,2-phenylene, 2-benzylene, 1,2-xylylene, 1,8-naphthylene, 2,2'-dinaphthylene or 2,2'-diphenylene, which is unsubstituted or substituted with halogen, -OH, C_1-C_6 alkyl, C_1-C_6 alkoxy, phenyl, benzyl, phenyloxy or benzyloxy; or R_6 stands for a radical of the formulas



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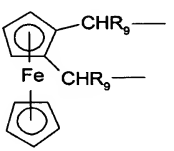

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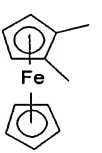

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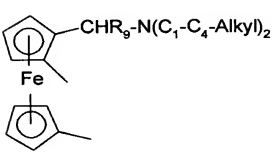

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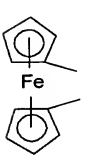

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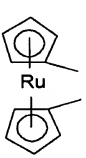

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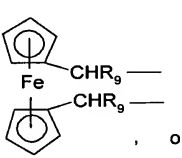

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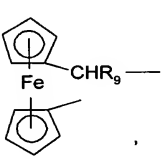

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in which R_9 denotes hydrogen, C_1-C_8 alkyl, C_1-C_4 fluoroalkyl, unsubstituted phenyl or phenyl substituted with 1 to 3 F, Cl, Br, C_1-C_4 alkyl, C_1-C_4 alkoxy of fluoromethyl.

17. (Previously Presented) A process according to claim 14, wherein the reaction medium is an aqueous reaction medium, and the diphosphine contains one or more water-solubilising polar substituents, which are attached either direct or via a bridging group to substituents of the phosphine group.

18. (Previously Presented) A process according to claim 14, wherein the reaction medium is an aqueous reaction medium, and the diphosphine is of formula XLIII,

$(M_1O_2C\text{-}CH_2CH_2\text{-}O\text{-}CH_2)_3\,C\text{-}NR_{42}\text{-}CO\text{-}\,R_{41}$ (XLIII)

in which M_1 stands for H, an alkali metal cation or an ammonium cation, R_{42} denotes C_1-C_4 alkyl or H, and R_{41} is a monovalent radical of a chiral ditertiary diphosphine, with the CO group being attached direct to a carbon or nitrogen atom of the diphosphine skeleton, or to an oxygen or nitrogen atom or to a carbon atom of a bridging group of the diphosphine skeleton.

19. (Currently Amended) A process for preparing tetrahydropterin or a tetrahydropterin compound comprising hydrogenating pterin or a pterin compound with hydrogen in a polar reaction medium in the presence of a hydrogenation catalyst that is a metal complex that is soluble in the reaction medium of formula XLIV, XLIVa or XLIVb,

$[X_7Me_2YZ]$ (XLIV), $[X_7Me_2Y]^+A_2^-$ (XLIVa) $[X_7Ru(II)X_8X_9]$(XLIVb),

in which

Y stands for monoolefin ligands or a diene ligand;

X_7 represents an achiral or chiral ditertiary diphosphine that forms a 5 to 7 membered ring with the metal atom Me_2 or Ru;

Me_2 denotes Ir(I) or Rh(I);

Z represents –Cl, -Br, or –I; and

A_2 is an anion of an oxy-acid or complex acid;

X_8 and X_9 are the same or different and have the meaning of Z or A_2, or X_8 and X_9 stand for allyl or 2-methylallyl, or X_8 has the meaning of Z or A and X_9 stands for hydride.

20-28. (Cancelled)

29. (Previously Presented) A process for preparing tetrahydropterin or a tetrahydropterin compound, comprising hydrogenating pterin or a pterin compound with hydrogen in alcohol or in alcohol in admixture with an organic solvent in the presence of a hydrogenation catalyst that is a metal complex that is soluble in the reaction medium.

30. (Previously Presented) A process for preparing tetrahydropterin or a tetrahydropterin compound, comprising hydrogenating pterin or a pterin compound with hydrogen in a polar reaction medium in the presence of a hydrogenation catalyst that is a metal complex that is and contains an achiral or chiral ditertiary diphosphine.

31. (Previously Presented) A process for preparing tetrahydropterin or a tetrahydropterin compound, comprising hydrogenating pterin or a pterin compound with

hydrogen in an alcoholic reaction medium in the presence of a hydrogenation catalyst-that is a metal complex that is soluble in the reaction medium and contains an achiral or chiral ditertiary diphosphine that is attached (a) to various carbon atoms of a hydrocarbon chain having 2 to 4 carbon atoms, or (b) directly via a bridging group $-CR_aR_b-$ in the ortho positions of a cyclopentadienyl ring or to a cyclopentadienyl ring of a ferrocenyl, wherein R_a and R_b are the same or different and stand for H, C_1-C_8 alkyl, C_1-C_4 fluroalkyl, C_5-C_6 cycloalkyl, phenyl, benzyl, or phenyl or benzyl substituted with 1 to 3 C_1-C_4 alkyl or C_1-C_4 alkoxy.

32. (Cancelled)

33. (Previously Presented) A process according to claim 3, wherein the hydrogenation is carried out at elevated pressure.

34. (Previously Presented) A process according to claim 1, wherein the metal complex contains iridium, rhodium or ruthenium.

35 (Previously Presented) A process according to claim 14, wherein the reaction medium is an alcoholic reaction medium, and wherein in the ditertiary diphosphines the phosphine groups are attached (a) to various carbon atoms of a hydrocarbon chain having 2 to 4 carbon atoms, or (b) directly via a bridging group $-CR_aR_b-$ in the ortho positions of a cyclopentadienyl ring or to a cyclopentadienyl ring of a ferrocenyl, wherein R_a and R_b are the same or different and stand for H, C_1-C_8 alkyl, C_1-C_4 fluroalkyl, C_5-C_6 cycloalkyl, benzyl, or phenyl.

36. (Previously Presented) A process according to claim 18, wherein R_{42} denotes H.

37. (Previously Presented) A process according to claim 31, wherein R_a and R_b are the same or different and stand for H, C_1-C_8 alkyl, C_1-C_4 fluroalkyl, C_5-C_6 cycloalkyl, benzyl, or phenyl.

38. (Previously Presented) A process according to claim 14, wherein the pterin compound is folic acid, a folic acid salt, a folic acid ester, a folic acid ester salt or a dihydro form thereof, with the proviso that in the event of using folic acid, a carboxylic acid thereof or a dihydro form thereof, the reaction medium is aqueous, and in the event of using a folic acid ester, a folic acid ester salt or a dihydro form thereof, the reaction medium is an alcohol.

39. (Previously Presented) A process according to claim 19, wherein the pterin compound is folic acid, a folic acid salt, a folic acid ester, a folic acid ester salt or a dihydro form thereof, with the proviso that in the event of using folic acid, a carboxylic acid thereof or a dihydro form thereof, the reaction medium is aqueous, and in the event of using a folic acid ester, a folic acid ester salt or a dihydro form thereof, the reaction medium is an alcohol.

40. (Previously Presented) A process according to claim 29, wherein the pterin compound is folic acid, a folic acid salt, a folic acid ester, a folic acid ester salt or a dihydro form thereof, with the proviso that in the event of using folic acid, a carboxylic acid thereof or a

dihydro form thereof, the reaction medium is aqueous, and in the event of using a folic acid ester, a folic acid ester salt or a dihydro form thereof, the reaction medium is an alcohol.

41. (Previously Presented) A process according to claim 30, wherein the pterin compound is folic acid, a folic acid salt, a folic acid ester, a folic acid ester salt or a dihydro form thereof, with the proviso that in the event of using folic acid, a carboxylic acid thereof or a dihydro form thereof, the reaction medium is aqueous, and in the event of using a folic acid ester, a folic acid ester salt or a dihydro form thereof, the reaction medium is an alcohol.

42. (Previously Presented) A process according to claim 31, wherein the pterin compound is folic acid, a folic acid salt, a folic acid ester, a folic acid ester salt or a dihydro form thereof, with the proviso that in the event of using folic acid, a carboxylic acid thereof or a dihydro form thereof, the reaction medium is aqueous, and in the event of using a folic acid ester, a folic acid ester salt or a dihydro form thereof, the reaction medium is an alcohol.

43. (New) A process according to claim 6, wherein R_1 and/or R_2 are, each independently, an aliphatic radical with 1-20 carbon atoms, a cycloaliphatic radical with 3-8 carbon atoms, a cycloaliphatic-aliphatic radical with 3-8 cyclic carbon atoms and 1 to 6 carbon atoms in the aliphatic part of the radical, an aromatic hydrocarbon radical with 6-14 carbon atoms, an aromatic-aliphatic radical with 7-15 carbon atoms, a heteroalkyl with 2-16 carbon atoms, a heterocycloaliphatic radical with 3-8 ring links, a heterocycloaliphatic-aliphatic radical with 3-8 ring links and 1 to 6 carbon atoms in the aliphatic part of the radical, a heteroaromatic radical with 4 to 13 carbon atoms, a heteroaromatic-aliphatic radical with 4 to 13 cyclic carbon

atoms and 1 to 6 carbon atoms in the aliphatic part of the radical, wherein the hetero part of each group means that the radical contains one or more oxygen, sulfur or nitrogen atoms.

44. (New) A process according to claim 17, wherein the bridging group is of formula

$$-X_5-R_{41}-$$

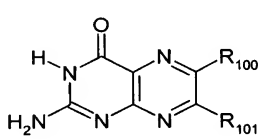
wherein

X_5 is a direct bond, O, NH, $Si(CH_3)_2$), $N(C_1-C_4\text{-alkyl})$, NH-CO, $N(C_1-C_4\text{-alkyl})CO$, CO-NH, $CON(C_1-C_4\text{-alkyl})$, NH-CO-O, $N(C_1-C_4\text{-alkyl})CO$-O, O-CO-NH, $O\text{-}CON(C_1-C_4\text{-alkyl})$, NH-CO-NH, $N(C_1-C_4\text{-alkyl})CO$-NH or $N(C_1-C_4\text{-alkyl})CO\text{-}N(C_1-C_4\text{-alkyl})$, and

R_{41} is a divalent hydrocarbon radical with 1 to 40 carbon atoms.

45. (New) A process according to claim 1, wherein the pterin compound is a pterin that is substituted in the 6- and/or 7- positions.

46. (New) A process according to claim 1, wherein the pterin compound is of formula (A)



(A)

in which

R_{101} is H or independently has the meaning of R_{100},

R_{100} is an organic radical attached via a C, O or N atom and having 1 to 50 carbon atoms, which is not interrupted or which is interrupted by one or more of -O-, -NH-, $-N(C_1-C_4\text{-alkyl})$-, -C(O)-, -C(O)O-, -OC(O)-, -OC(O)O-, -C(O)NH-, -NHC(O)-, -NHC(O)O-, -OC(O)NH-, -NHC(O)NH-, $-C(O)N(C_1-C_4\text{-alkyl})$-, $-N(C_1-C_4\text{-alkyl})C(O)$-, $-N(C_1-C_4\text{-alkyl})C(O)O$-, $-OC(O)N(C_1-C_4\text{-alkyl})$-, $-N(C_1-C_4\text{-alkyl})C(O)N(C_1-C_4\text{-alkyl})$-, and which

is unsubstituted or is substituted with F, Cl, Br, -CN, -OCN, -NCO, -OH, $-NH_2$, $-NHC_1$-C_4-alkyl, $-N(C_1$-C_4-alkyl$)_2$, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-hydroxyalkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, -C(O)OH, $-C(O)OM_{100}$, $-C(O)OC_1$-C_4-alkyl, $-C(O)NH_2$, $-C(O)NHC_1$-C_4-alkyl, $-C(O)N(C_1$-C_4-alkyl$)_2$, R_{102}-C(O)O-, R_{102}-OC(O)O-, R_{102}-C(O)NH-, R_{102}-C(O)N(C_1-C_4-alkyl)-, R_{102}-NHC(O)NH-, R_{103}C(O)- or -CH(O),

M_{100} is Li, K, Na, NH_4^+, or ammonium with 1 to 16 carbon atoms,

R_{102} is C_1-C_8-alkyl, C_5- or C_6-cycloalkyl, phenyl or benzyl, and

R_{103} is C_1-C_4-alkyl, phenyl or benzyl.